

ABSTRACT OF THE INVENTION

The invention provides a Vitaxin antibody and a LM609 grafted antibody exhibiting selective binding affinity to $\alpha_v\beta_3$. The Vitaxin antibody consists of at least one Vitaxin heavy chain polypeptide and at least one Vitaxin light chain polypeptide or functional fragments thereof. Also provided are the Vitaxin heavy and light chain polypeptides and functional fragments. The LM609 grafted antibody consists of at least one CDR grafted heavy chain polypeptide and at least one CDR grafted light chain polypeptide or functional fragment thereof. The invention additionally provides a high affinity LM609 grafted antibody comprising one or more CDRs having at least one amino acid substitution, where the $\alpha_v\beta_3$ binding activity of the high affinity LM609 grafted antibody is enhanced. Nucleic acids encoding Vitaxin and LM609 grafted heavy and light chains as well as nucleic acids encoding the parental non-human antibody LM609 are additionally provided. Functional fragments of such encoding nucleic acids are similarly provided. The invention also provides a method of inhibiting a function of $\alpha_v\beta_3$. The method consists of contacting $\alpha_v\beta_3$ with Vitaxin or a LM609 grafted antibody or functional fragments thereof under conditions which allow binding to $\alpha_v\beta_3$. Finally, the invention provides for a method of treating an $\alpha_v\beta_3$ -mediated disease. The method consists of administering an effective amount of Vitaxin or a LM609 grafted antibody or functional fragment thereof under conditions which allow binding to $\alpha_v\beta_3$.